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THE INVASION OF PORTO RICO FROM
A MEDICAL STANDPOINT.

BY

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LIEUTENANT-COLONEL, U. S. V., CHIEF OF THE OPERATING STAFF WITH THE
ARMY IN THE FIELD.

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BY NICHOLAS SENN, M.D.,
LIEUTENANT-COLONEL, U. S. V., CHIEF OF THE OPERATING STAFF
WITH THE ARMY IN THE FIELD.

THE occupation of Cuba and the Philippine Islands by our conquering navy and army in such rapid succession seemed to increase the desire of conquest and opportunities to test the strength of our arms. With the destruction of the weak navy of our enemy there was nothing in the way of sending troops to any of the many Spanish possessions. The fall of the heroic Cervera and his faithful little band off the harbor of Santiago before the murderous fire of our well-equipped fleet cleared the pathways of the ocean of further sources of danger. It was but natural that the beautiful island of Porto Rico, one of Spain's most valuable possessions, should have been selected by the military authorities as the next objective point for contention. Repeated attacks by our navy on its best stronghold, San Juan, had failed to bring about surrender and to give a foothold on Porto-Rican soil. So far the navy had taken the lead in bringing Spain to terms and the army was anxious to do its share in wresting from its greedy grasp another enslaved people. Major-General Miles, who conducted the invasion in person, decided to march upon San Juan from several directions, and after uniting the forces attack the city jointly. The experience gained in Cuba had taught us an important lesson in conducting the Porto-Rican campaign. General Miles laid his plans wisely and with special reference to gain the desired object with as little suffering and loss of life as possible. Every movement in this campaign was made with a due regard for the welfare and success of our

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636.

troops rather than a desire for personal gain and aggrandizement which characterized the Cuban campaign as every one knows. He was well aware of the depressing effects of the tropical climate on the unseasoned troops and of the necessity of resorting to timely and efficient precautions in preventing disease. From experience and personal observation he recognized the fact that the unavoidable privations incident to war are multiplied many times when the seat of war is a strange and remote country which presents a climate and environments unfamiliar to the invading force. His actions were clean-cut admissions that he was in need of a medical advisor and that they were influenced by the frequent consultations held with the chief surgeon. The war in Porto Rico was conducted upon the most humane principles, and although no great battles were fought, victory upon victory followed the footsteps of our army and in less than three weeks our flag floated over three of the largest cities of the island. Our troops love and respect their leader and have followed him without fear and grumbling under the scorching sun, full of confidence and trust.

The news that an armistice had been declared reached the headquarters at Ponce, August 14th, and the troops are now resting on their arms awaiting the final adjustment of the terms of peace. Eager to fight, yet every soldier in the field received this message of peace with joy and enthusiasm, fully satisfied that the army had done justice to the flag and country it represents. Colonel Charles R. Greenleaf, chief surgeon of the army in the field, accompanied General Miles on his trip from Guantanamo to Porto Rico and has been with the army ever since. He was long enough in Cuba to gain a full insight into the horrors created by infectious diseases which so constantly follow large armies, especially in a war of invasion. He was amazed when he saw to what extent yellow fever had broken out during the few weeks the troops had been in

Cuba. There was no difficulty in tracing the disease to a total lack of precaution on the part of the general in command. Colonel Greenleaf had given his advice and directions before the army left Tampa, but they were not heeded. Owing to want of cooperation on the part of General Shafter the medical officers found themselves powerless in preventing and combating the dreaded disease. Colonel Greenleaf's prompt and energetic action on his arrival in Cuba did much in suppressing the disease, but it was too late to guard against a general outbreak. The many recent graves in Cuba containing the remains of the victims of this disease are the best proof of what will happen when the leader of an army ignores the health and comfort of his men. In planning the Porto-Rican invasion General Miles availed himself of the invaluable services of his chief surgeon. The expedition was well equipped with medicines, hospital stores, and medical officers to meet all possible emergencies. The result has been that the army has been so far singularly exempt from disease with the exception of typhoid fever and the effects of heat, both beyond the control of medical officers. Since his arrival in Ponce Colonel Greenleaf has been the busiest man in the army. He has not been content in simply issuing his orders from headquarters, but he has attended in person to the execution of every detail. He has visited the camps, the hospitals, and exercised personal oversight over the distribution of hospital supplies, instruments, and medicines. Anxious to serve the sick and wounded, impatient when face to face with a slow, hesitating subordinate, he has more than once performed temporarily the duties of an ordinary hospital steward to furnish a much needed object lesson. His work justifies the confidence imposed when he was appointed to the high and responsible position he holds.

FIRST SKIRMISH.

General Miles landed with his expedition, which included

a number of war-vessels, at Guanico, Monday, July 25th. The harbor was entered by the now famous little gunboat "Gloucester," under the command of Lieutenant-Commander Wainwright. A landing was effected by thirty sailors, the Spanish flag was hauled down and the Stars and Stripes raised amid the cheers of the sailors who knew well that what they had just witnessed meant liberty and freedom for the down-trodden people of the island of which they had just taken possession. The planting of the flag and the deafening cheers which reechoed from the hills of the liberated island were followed by a volley from the hidden enemy, which was promptly responded to by the guns of the "Gloucester" and a Colt rapid-fire gun which had been taken ashore. The Spaniards fled in confusion and sought shelter among the adjacent hills, leaving four killed on the field, while our soldiers escaped without a scratch.

The turn of the infantry came soon after landing in the form of a lively skirmish in which we lost one killed and fifteen wounded, of whom one died a day or two later. Most of the injuries were flesh wounds which healed in a remarkably short time. A very interesting incident occurred during this skirmish. The day was hot and our troops had to ascend a steep hill from the crest of which the Spaniards defended themselves. One of the volunteer soldiers, outrunning his comrades, advanced far ahead of his line, and when he had nearly reached the Spanish position was overcome by heat. He fell in a semi-unconscious state. A Spanish doctor rushed to his aid with a stretcher and two hospital-corps men, administered the necessary restorative, and had him conveyed at once within our line. This one act alone goes to show that the Spaniards have often been unjustly accused of being cruel and inhuman. This certainly has not been the case during the present war. From my own

observations I am sure that they have respected the Red Cross. In fact the Red-Cross people of Porto Rico, composed largely of Spaniards, have shown the greatest activity and interest in their humane work during the entire campaign. If anything, they have rather been over zealous, judging from the number of insignia displayed and worn. It was a common thing to see men wearing a white cap with an immense red cross on top, another one in front, besides the brassard. Ponce was taken and occupied without any resistance whatever. The citizens received our soldiers with enthusiasm and manifestations of joy. General Miles was hailed as a long-looked for friend rather than a conqueror.

The next engagement occurred between Arroyo and Guayama, between a small Spanish force in ambush and General Haines' brigade, and resulted in eleven wounded on our side. The only death following this skirmish was that of a soldier of the Third Illinois Infantry who was shot accidentally by an unknown man of the Fourth Pennsylvania Regiment. The bullet caused an extensive non-penetrating injury of the chest from the effects of which he died next day. Such accidents have occurred too often during the present war and to prevent repetition in the future this matter should be investigated, as was done in this instance, by the proper authorities. Among the injured was a man who was shot through the pelvis, and another one the subject of a gunshot wound of the elbow-joint, both of them doing well a few days later when I examined the wounded in the Brigade Hospital at Guayama. The third skirmish took place between the advance column of General Wilson's Division on the march to San Juan and a small Spanish force entrenched on the summit of a high and steep hill. Lieutenant Haines, the son of General Haines, was the only one who was brought on board the "Relief" August 14th. One of the wounded was oper-

ated on by Dr. Parkhill in an ambulance. The abdomen was torn open by a fragment of a shell, the intestines protruded, and a resection had to be made of a loop for a tearing injury. It was reported that the patient rallied well from the immediate effects of the operation and that hopes were entertained of his recovery. Another engagement took place between the troops under command of General Schwan on their way from Ponce to Mayaguez and about 1000 Spaniards ambushed four miles from the latter city. The fight resulted in two killed and eighteen wounded on our side. All of the wounded were brought on board the hospital ship "Relief," which called at Mayaguez on her way to New York August 15th.

Such is a brief account of the casualties sustained by our army during the Porto-Rican campaign. The experience here coincided with that gained in Cuba to the extent of confirming the humane nature of the modern weapon. The proportion of killed to wounded is even smaller than in the Cuban war, as well as the number of seriously injured. Thanks to the more elaborate preparations for the campaign the wounded received prompt and efficient attention. The suffering of the well, sick, and wounded cannot be compared with what I saw in Cuba. War is a great educator and should we again be called upon to invade a foreign country, we shall profit by the experience of the past.

TYPHOID FEVER IN PORTO RICO.

The native doctors in Ponce, Porto Rico, gave us the assurance that not a single case of yellow fever had been seen in that city for the last three years. We were informed that in San Juan isolated cases occur from time to time. Malaria is prevalent in all the valleys, more especially in and around Ponce. The large pendulous abdomens and the pale faces of the many little naked children in city and country are the best witnesses in showing the

prevalence of malarial intoxication. Typhoid fever is endemic in certain localities, but at present Ponce is almost free from this disease. Having seen the destruction of life and the indescribable suffering caused by yellow fever in Cuba, Colonel Greenleaf naturally turned his attention toward protecting our troops in Porto Rico against this scourge. The proximity of Porto Rico to Cuba, and the many possible sources of infection made such a course imperative. That this fear was not unfounded, and that the chief surgeon recognized the danger, and made use of timely precautions are best shown by the contents of a letter addressed to the Adjutant-General, Headquarters of the Army, and Circular No. 1 issued before the army sailed from Guantanamo to Porto Rico, and a copy of the quarantine regulations formulated at the same time.

Headquarters of the Army, }
On Board the U. S. S. "Yale," en route }
to Porto Rico, July 23, 1898. }

To the Adjutant-General, Headquarters of the Army.

SIR: I have the honor to submit the following recommendations for the prevention, as far as possible, of the introduction of yellow fever into the command now about to land on the island of Porto Rico:

The assignment of an officer of rank, to be placed in command of the base of supplies, with authority to indicate the sites to be occupied by the various supply-depots and the hospital, and to enforce the regulations governing the health of the attachés of these departments and the persons who may visit them on business.

The assignment of a sanitary inspector whose duty it shall be to examine all vessels and persons arriving at our base from seaward ports, and to prepare sanitary regulations for the government of all transportation and persons arriving and departing from stations by land. The officer should have authority to quarantine all suspected persons and means of transportation, and to disinfect their belong-

ings either by fire or by such other means as may be deemed necessary.

All persons connected with the army are forbidden to enter any building whatever on the island without express authority from these headquarters, and all buildings in rural districts that may be suspected of harboring the germs of disease should be destroyed by fire or otherwise disinfected.

As woven goods, particularly those of woolen fabric, are special carriers of disease, the purchase or acceptance of articles of this kind from stores or inhabitants of the island is strictly forbidden. Any such property found within the lines will be at once destroyed and the holder subject to punishment.

That the commanders of regiments be instructed to prepare their camping-grounds with great care and maintain a rigid police in them; under no circumstances shall they camp on ground that has previously been occupied either by troops or collective bodies of the inhabitants.

That medical officers be required to make frequent inspections of the commands to which they belong and that any suspicious case of fever be immediately isolated and the fact of its occurrence reported to these headquarters.

Canteens should be filled daily with tea or coffee, and these beverages used habitually instead of water, unless that has been previously boiled.

Very respectfully,

CHARLES R. GREENLEAF,

Colonel, Assistant Surgeon-General, U. S. A., Chief Surgeon, Army in the Field.

Headquarters of the Army, Office of the Chief }
Surgeon, On Board U. S. S. "Yale," en route to }
Porto Rico, July 24, 1898. }

Circular No. 1.

1. Medical officers will, upon receipt of this circular, report to the chief surgeon of the army the number of

medical officers, hospital stewards, acting hospital stewards and privates of the hospital corps on duty with their command. Also the number of ambulances, litters, and tents, and if medical supplies are insufficient, note the general character needed. This report will be made on the enclosed form :

2. A field hospital will be organized at the army base as soon as possible after landing, and a depot of supplies will be connected with it. As we are widely separated from our source of supplies a strict economy in their use is necessary; surgeons of divisions and brigades will give their personal attention to this important subject.

3. Extreme vigilance is enjoined upon medical officers in the matter of camp sanitation, errors in this particular being promptly reported to the respective commanding officers.

4. The experience at Santiago has demonstrated the efficiency of properly applied first dressings in gunshot wounds; these should be left untouched until the patient arrives at the base hospital, unless the condition of the wound absolutely demands a redressing en route from the first-dressing station. All diagnosis tags will be marked "Dressing not to be removed," or "Redressing required," as the condition demands. Unless an imperative necessity exists, surgical operation will not be attempted at the front.

CHAS. R. GREENLEAF,
Colonel, Assistant Surgeon-General, U. S. A., Chief
Surgeon, Army in the Field.

QUARANTINE REGULATIONS FOR THE BASE OF MILITARY EXPEDITION TO PORTO RICO.

1. Every vessel shall be officially visited by the inspector before communication is made with other vessels or the shore.

2. A vessel having yellow fever or smallpox on board

shall not be allowed to communicate with the shore, or with other vessels, but shall leave the island.

3. Vessels coming from sources of infection shall be detained five days without communicating either with the shore or with other vessels. If at the expiration of this time no cases of fever shall have developed, landing may be made under the following precautions:

All fomites shall be disinfected by one of the following methods: Immersion for one hour in 1-1000 solution of bichlorid; sulphur fumigation in a chamber 24 hours, four pounds of sulphur being used for each 1000 cubic feet of space, or boiling half an hour with complete immersion. The following need not be disinfected unless directly exposed to infection:

All new and dry material unpacked, all iron and steel implements, all goods in new and original packages not having been broken or packed in an infected locality. Goods other than textile contained in textile material, such as coffee in sacks, bacons, spices, etc., kept dry, and not broken in an infected locality, do not require disinfection other than the container, which shall be treated as fomites as above. Fruits, sound, unless exposed in an infected locality, need no disinfection. Live stock may be admitted.

Such ships shall be thoroughly cleansed and disinfected by the free use of 1-1000 solution of bichlorid, and by fumigation with sulphur before they may again receive men or supplies.

Ships quarantined shall display the usual flag, and those in detention shall be visited by the inspector daily until the time of quarantine shall have expired.

4. Vessels carrying passengers or having fomites from localities of infection, though they (the vessels) may hail from healthy ports, shall be subject to the same quarantine restrictions as vessels known to hail from infected localities.

5. Due precaution shall be taken to prevent infection of the base of supplies through communicating with infected localities along the line of march, by teamsters, and others. As far as possible they should not be allowed to remain at the base longer than necessary to load and unload, nor to come in such contact as to communicate infection. Stragglers, prisoners, and strangers should be immediately sent away.

CHARLES R. GREENLEAF,

Colonel, Assistant-Surgeon General, United States Army;
Chief Surgeon, Army in the Field.

Major Woodbury was appointed sanitary inspector. He met with the hearty cooperation of the city authorities of Ponce in the performance of his onerous and often unpleasant duties. The sanitary condition of the city underwent a great improvement in a few days. The water-supply was found satisfactory. The absence of a sewerage system threw many obstacles in the way. The appearance of smallpox in a village some distance from Ponce made vaccination necessary among the soldiers and natives who were not protected against the disease. An abundant supply of vaccine virus was on hand, and was at once issued and used. When I arrived at Ponce, August 7th, I found typhoid fever raging to an alarming extent. It was desirable to trace the origin of the disease. The absence of typhoid fever during this season of the year, its outbreak in all the commands, and the short time that had intervened between leaving the United States and the landing in Porto Rico, made it probable that the disease could be traced to the infected camps occupied by the troops before leaving for Porto Rico. General Miles was very anxious to obtain reliable information regarding the origin and spread of this disease. Pursuant to the following order I made an extensive and systematic investigation:

Headquarters of the Army, }
 Office of Chief Surgeon, Port Ponce, Porto Rico, }
 August 11, 1898. }

Lieutenant-Colonel Nicholas Senn, Surgeon, U. S. V.,
 Chief of Operating Staff of the Army.

SIR: You will proceed to the town of Ponce, visit the military and other hospitals of that town, and such of the camps in its vicinity as you may deem necessary, for the purpose of investigating and, if possible, determining the cause of typhoid and other fevers now prevailing in the army, and report the result of your investigation in writing to me. Should you find it necessary to have the services of an interpreter, or other civilian to aid in your work, you are hereby authorized to employ him, sending the bill to this office for payment.

Very respectfully,

CHARLES R. GREENLEAF,

Colonel, Assistant Surgeon-General, U. S. A., Chief
 Surgeon, Army in the Field.

I obtained accurate information of two hundred fever patients, of which number 90 per cent. were well marked typhoid fever, the balance malaria and the result of sun-stroke. I estimated the number of fever patients in Ponce and in the immediate vicinity at 250. In extending my inquiries to General Brook's command, with headquarters at Guayama, I found about 145 additional cases; however, in that locality malaria seemed to predominate. Most of the patients came from Chickamauga by way of Charleston and Newport News. The Second and Third Wisconsin Regiments furnished the largest contingent. Almost every soldier in the different hospitals belonging to either of these regiments suffered from typical typhoid fever, and what attracted my attention was that the disease appeared to be of a more serious type than in most of the men belonging to other regiments. The locality from which these regiments came, when encamped at

Chickamauga, must have been badly infected.

As the result of my investigation, I reported to Colonel Greenleaf the number of cases found, and that in my opinion the disease was contracted in every instance before leaving the camps in the United States. In view of the fact that most of the cases came from Chickamauga I suggested at the same time that the Medical Department should recommend immediate evacuation of that camp. In Ponce most of the patients found shelter and care in the Spanish Military Hospital, then in charge of Major Ten Eyck, U. S. A. The Club House and a school for girls of the Sisters of Charity were also placed at the disposal of the chief surgeon and were soon filled with patients. Miss Chanler of New York did excellent service as a nurse in the former temporary hospital. A congestion which occurred in the Military Hospital, and which could not be prevented, took place when General Wilson's Division moved forward and unloaded at the door all of the sick in the Division Hospital, some 150 in number. The overcrowded condition was remedied the next day when a large number of the more gravely ill were sent on board the "Relief," anchored in the harbor of Ponce. Medical supplies were in abundance at all times and were freely issued without any formality. The "Relief," and later the yacht "May," brought an abundant supply, with many delicacies for the sick. Milk was bought and freely supplied to the sick. It was the intention of the chief surgeon to establish an extensive outdoor receiving hospital as soon as the tentage arrives, which, according to information received from the Surgeon-General, was then on the way. The number of new cases of typhoid fever in the Porto-Rican army will probably be a limited one, as the victims of this disease were immediately separated from their comrades, and if the troops are recalled as soon as the treaty of peace has been signed we need entertain little fear of the indigenous spread of the disease.

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